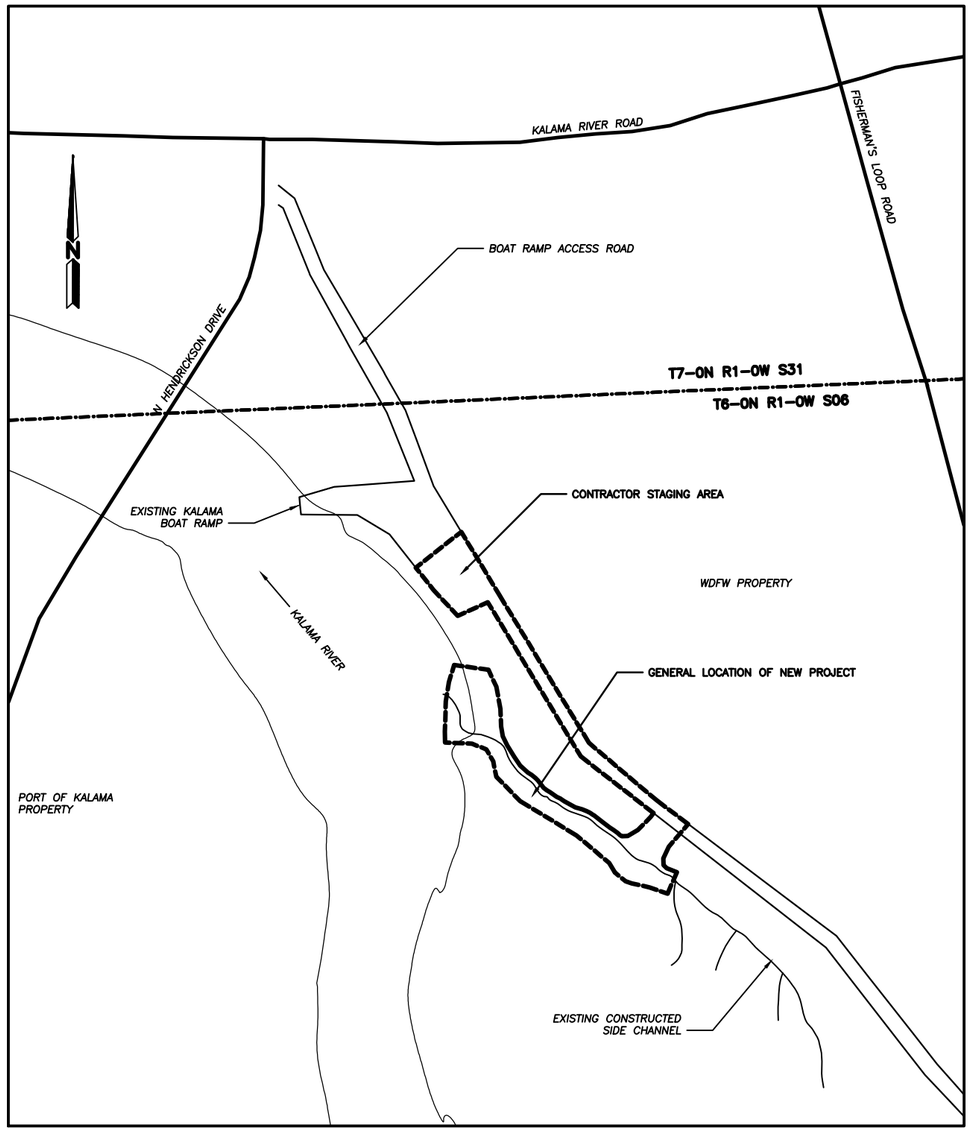
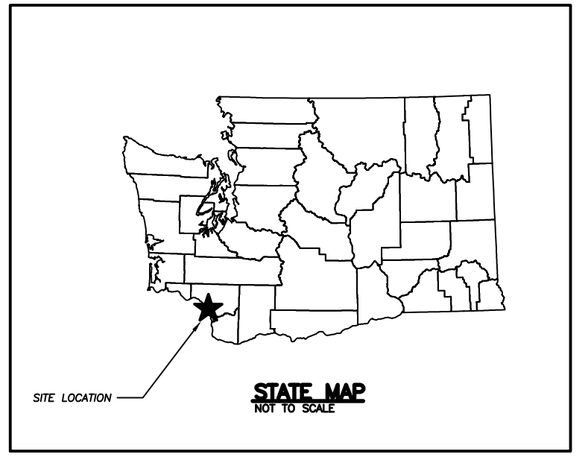
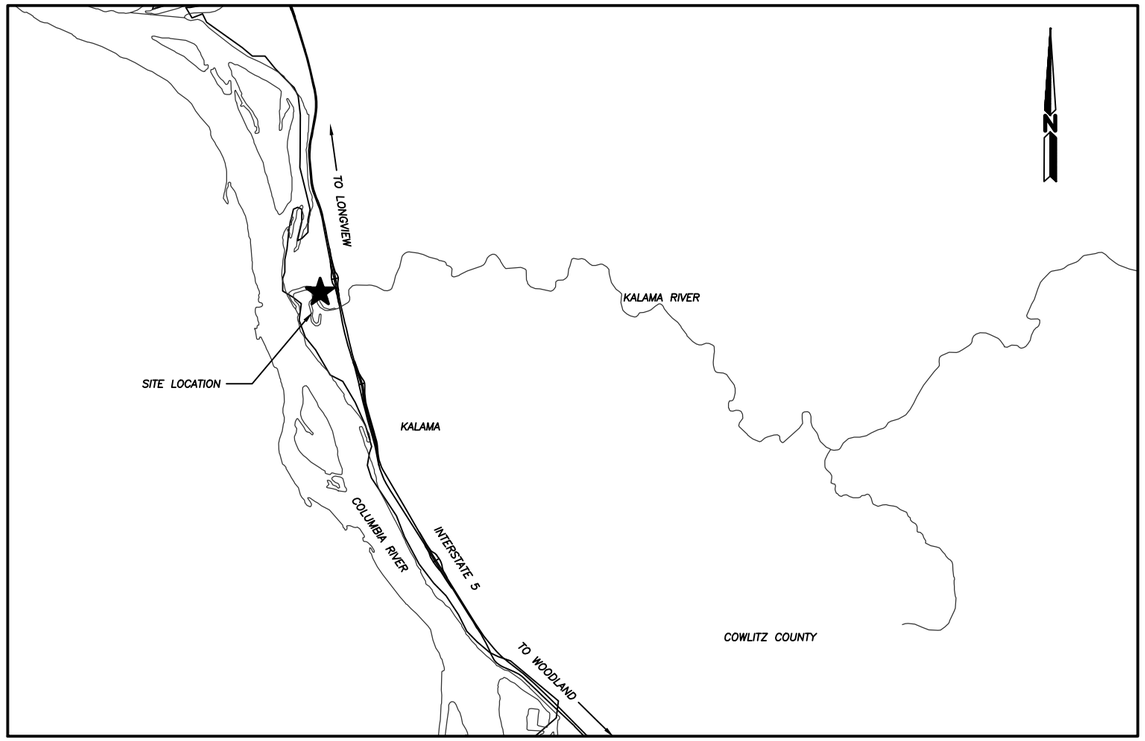


PROJECT OVERVIEW
SCALE: 1" = 120'-0"



STATE MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

PRELIMINARY – 60% SUBMITTAL

nhc
northwest hydraulic consultants
16300 Christensen Rd Ste. 350
Seattle, WA 98188-3418
phone:(206) 241-6000
fax:(206) 439-2420
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WASHINGTON STATE DEPARTMENT OF FISH AND WILDLIFE

ENGINEERING STAMP

SYM	DATE	REVISION DESCRIPTION	BY

APPROVED AND RELEASED FOR CONSTRUCTION

CHIEF ENGINEER ..... DATE: .....

PROGRAM ..... DATE: .....

0 —— 1"
BAR MEASURES ONE INCH ON ORIGINAL DRAWINGS

DESIGNED BY C LONG
CHECKED BY E ROWLAND
DRAWN BY C LONG
DATE 11-12-2012

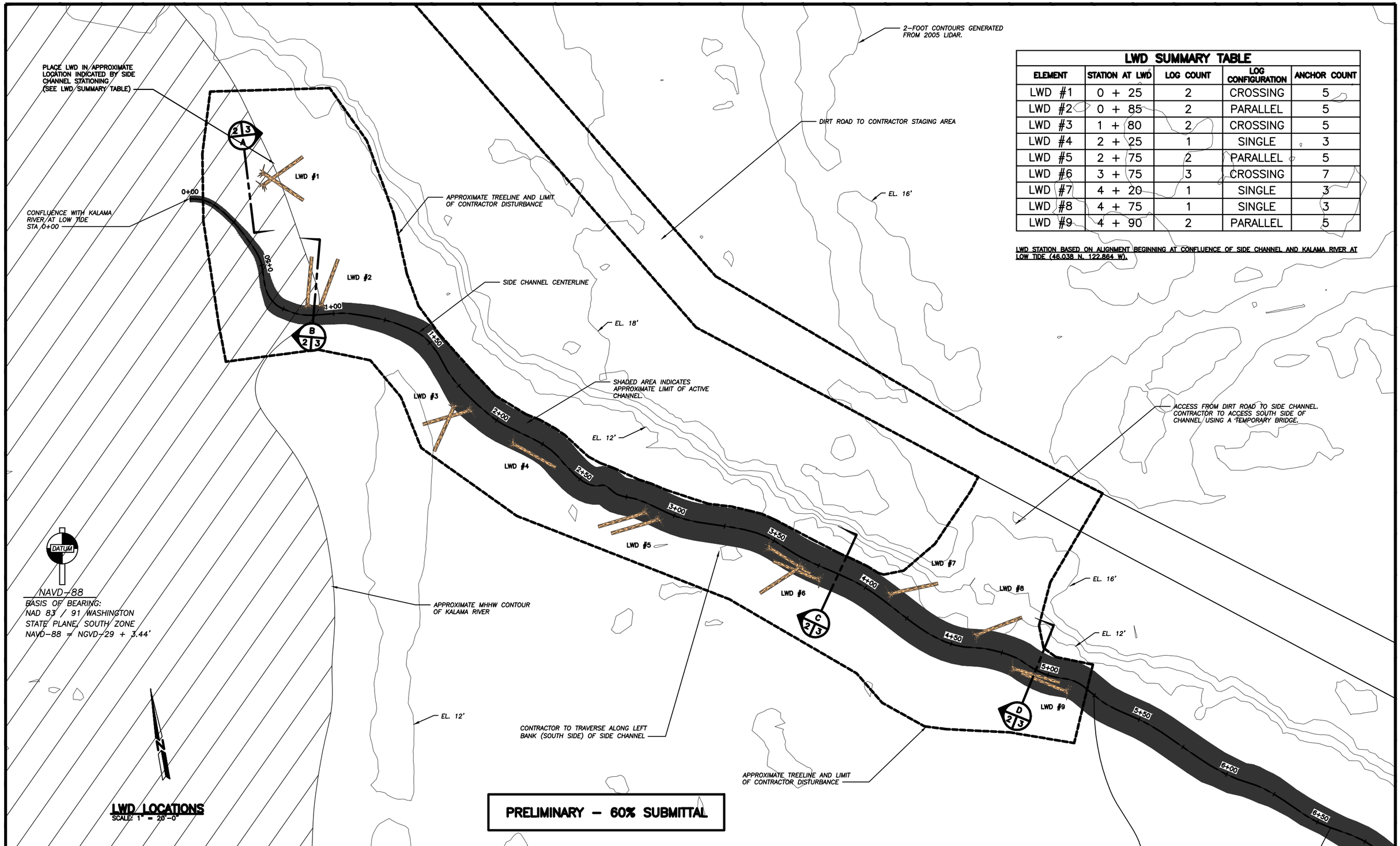
KALAMA FALLS HATCHERY

MODROW TRAP MITIGATION, LOWER KALAMA

PROJECT OVERVIEW AND VICINITY MAP

PROJECT NO. CZ:H28:12-2

SHEET 1 OF 4



LWD SUMMARY TABLE

ELEMENT	STATION AT LWD	LOG COUNT	LOG CONFIGURATION	ANCHOR COUNT
LWD #1	0 + 25	2	CROSSING	5
LWD #2	0 + 85	2	PARALLEL	5
LWD #3	1 + 80	2	CROSSING	5
LWD #4	2 + 25	1	SINGLE	3
LWD #5	2 + 75	2	PARALLEL	5
LWD #6	3 + 75	3	CROSSING	7
LWD #7	4 + 20	1	SINGLE	3
LWD #8	4 + 75	1	SINGLE	3
LWD #9	4 + 90	2	PARALLEL	5

LWD STATION BASED ON ALIGNMENT BEGINNING AT CONFLUENCE OF SIDE CHANNEL AND KALAMA RIVER AT LOW TIDE (46.038 N, 122.864 W).

LWD LOCATIONS
SCALE: 1" = 20'-0"

PRELIMINARY – 60% SUBMITTAL

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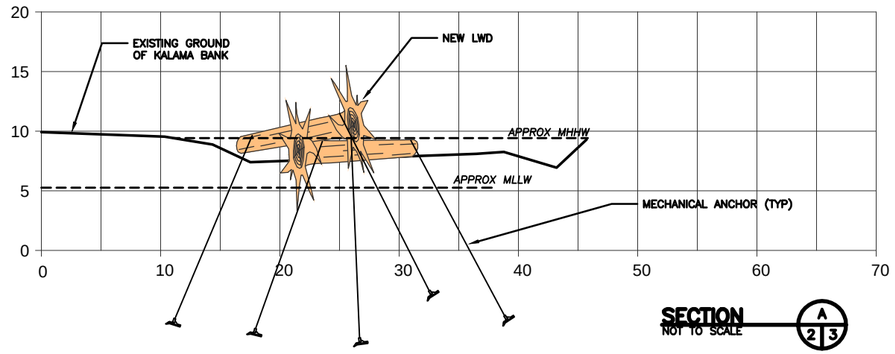
KALAMA FALLS HATCHERY

MODROW TRAP MITIGATION, LOWER KALAMA

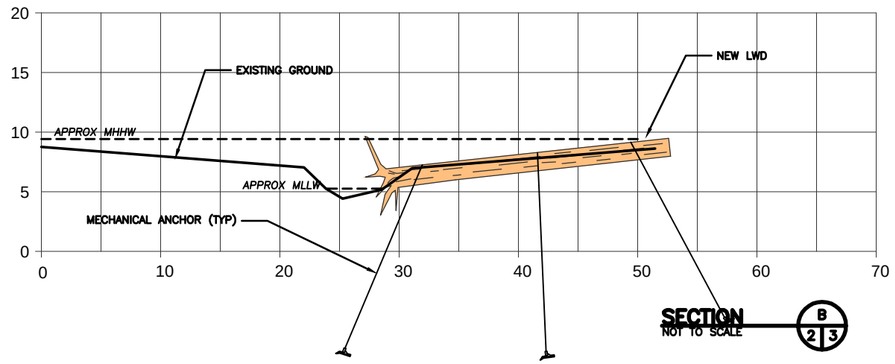
LARGE WOODY DEBRIS LOCATIONS AND SCHEDULE

PROJECT NO. CZ:H28:12-2

SHEET 2 OF 4



SECTION A 2 3
NOT TO SCALE



SECTION B 2 3
NOT TO SCALE

GENERAL NOTES

PLACE ALL LWD STRUCTURES APPROXIMATELY WHERE SHOWN ON SHEET 2. ENGINEER IN THE FIELD SHOULD PROVIDE GUIDANCE ON EXACT LOCATION.

EACH LOG SHOULD BE MINIMUM 18" DBH (20" ± 2" DBH), MINIMUM ROOTWAD DIAMETER 5 FEET, AND MINIMUM LENGTH 15 FEET. LOGS SHOULD BE ROT-RESISTANT SPECIES SUCH AS SITKA SPRUCE, DOUGLAS FIR OR CEDAR.

LOG PLACEMENT WILL REQUIRE NO FILL AND ONLY INCIDENTAL EXCAVATION TO SEAT THE LOGS.

PLACE LWD #1 ON BANK OF KALAMA RIVER WITHIN STATE OWNED AQUATIC LAND. SEE SECTION A FOR APPROXIMATE PROFILE VIEW.

PLACE LWD #2 SO THAT ROOTWADS ONLY ARE PROTRUDING INTO THE ACTIVE SIDE CHANNEL. DO NOT OBSTRUCT SIDE CHANNEL WITH LWD.

LOCATE LWD #4 AND #9 SO THAT THE ENTIRE LOGS ARE LAYING WITHIN THE ACTIVE CHANNEL, PARALLEL TO THE BANK TOE.

LOCATE LWD #3, #5, #7, AND #8 SO THAT THE ROOTWAD IS RESTING ON THE CHANNEL BOTTOM. SEE SECTION B FOR APPROXIMATE PROFILE VIEW.

LOCATE LWD #6 SO THAT TWO LOGS ARE PARALLEL TO THE BANK TOE AND ONE LOG IS LAYING ON TOP, WITH ROOTWAD RESTING ON THE CHANNEL BOTTOM.

CHAIN TO BE ¼" LONG-LINK GALVANIZED DECK LASHING CHAIN. WRAP CHAIN AROUND NOTCHED LOGS TWO TIMES AND STAPLE TO LOG.

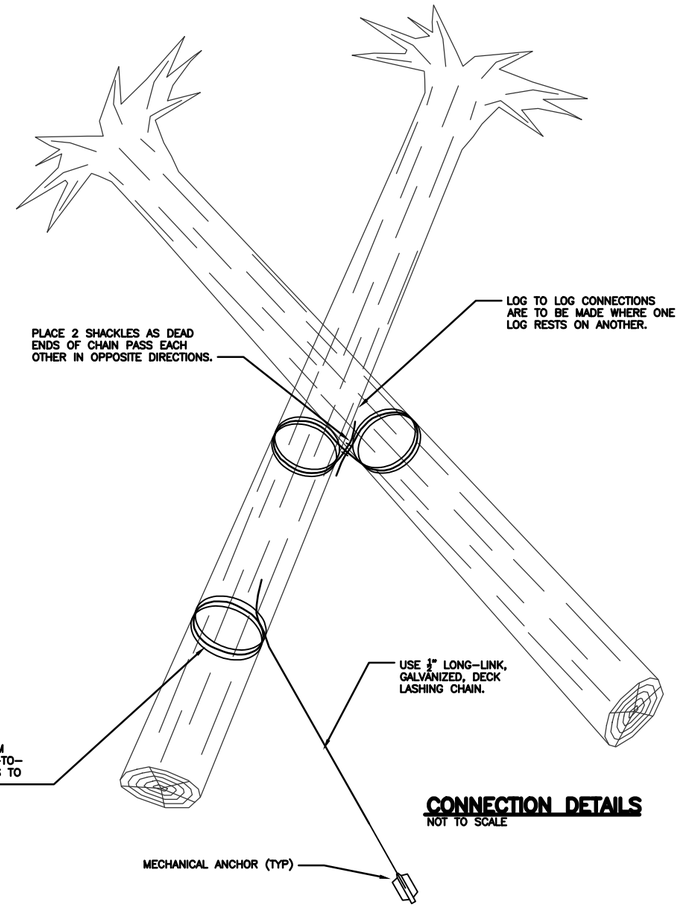
LOG TO LOG CONNECTIONS ARE TO BE MADE WHERE ONE LOG RESTS ON ANOTHER (NO GAP BETWEEN LOGS). CHAIN SHOULD BE SECURED AROUND THE LOGS IN A FIGURE-8 FASHION SO THAT ANY LOG MOVEMENT WILL RESULT IN A TIGHTENING OF THE CONNECTION.

ANCHOR EACH LOG USING MECHANICAL ANCHORS (MANTA RAY MR-2 OR EQUIVALENT), EACH CAPABLE OF HOLDING 5-8 KIPS IN THE SOIL FOUND IN THE PROJECT AREA.

EACH LOG WILL HAVE A MINIMUM OF 2 ANCHORS ATTACHED.

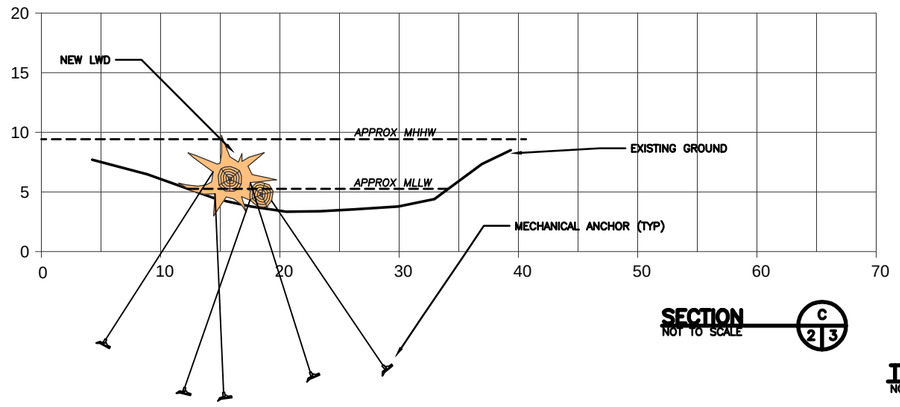
APPROXIMATE MHHW LEVEL IS 9.4' AND APPROXIMATE MLLW IS 5.3' WITHIN PROJECT AREA (VERTICAL DATUM NAVD-88).

THE FEMA 100-YEAR WSEL AT THE MOUTH OF THE KALAMA RIVER IS 22.1' NAVD-88. THEREFORE ALL LWD WILL BE PLACED WITHIN THE 100-YEAR FLOODPLAIN (ZONE AE).

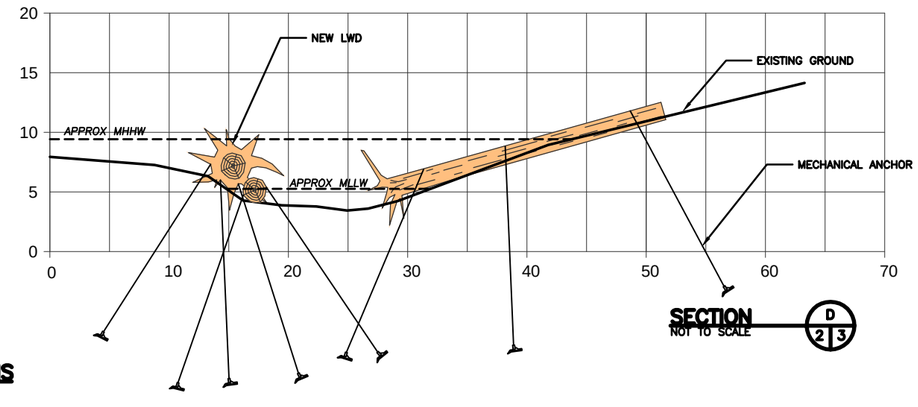


CONNECTION DETAILS
NOT TO SCALE

PRELIMINARY – 60% SUBMITTAL



SECTION C 2 3
NOT TO SCALE



SECTION D 2 3
NOT TO SCALE

TYPICAL CROSS-SECTIONS
NOT TO SCALE

DATUM

NAVD-88

BASIS OF BEARING:
NAD 83 / 91 WASHINGTON STATE PLANE, SOUTH ZONE
NAVD-88 = NGVD-29 + 3.44'

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ENGINEERING STAMP

SYM	DATE	REVISION DESCRIPTION	BY
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PROGRAM ..... DATE: .....

0 ——— 1"
BAR MEASURES ONE INCH ON ORIGINAL DRAWINGS

DESIGNED BY C LONG
CHECKED BY E ROWLAND
DRAWN BY C LONG
DATE 11-12-2012

KALAMA FALLS HATCHERY
MODROW TRAP MITIGATION, LOWER KALAMA
TYPICAL CROSS-SECTIONS, CONNECTION DETAILS, AND NOTES

PROJECT NO. CZ-H28:12-2

SHEET 3 OF 4

PRELIMINARY – 60% SUBMITTAL

PROPERTY BOUNDARY

PARCEL: 61334
OWNER: PORT OF KALAMA

KALAMA RIVER

EXISTING BOAT LAUNCH

PROPERTY BOUNDARY

PARCEL: 60822
OWNER: PORT OF KALAMA

PARCEL: 61336
OWNER: WDFW

CONTRACTOR STAGING AREA
APPROX DIMENSIONS 90' X 115'

DIRT ROAD TO CONTRACTOR STAGING AREA

PARCEL: 61334
OWNER: PORT OF KALAMA

APPROXIMATE MHHW CONTOUR
OF KALAMA RIVER

MAXIMUM LIMITS OF HYDROSEEING.
ONLY HYDROSEED GROUND THAT IS
DISTURBED DURING CONSTRUCTION.

SIDE CHANNEL CENTERLINE

N

GENERAL NOTES

CONTRACTOR TO STAGE ALL EQUIPMENT AND MATERIAL IN THE ABOVE NOTED STAGING AREA. APPROXIMATE DIMENSIONS ARE 90' BY 115'. BOAT LAUNCH AND BALANCE OF PARKING AREA TO REMAIN OPEN TO PUBLIC.

NO GENERAL PLANTING PLAN IS NEEDED. NO TREES SHOULD BE FELLED DURING CONSTRUCTION. CONTRACTOR TO REPLACE SHRUBS THAT ARE DESTROYED DURING CONSTRUCTION WITH SIMILAR SHRUB.

AFTER CONSTRUCTION, CONTRACTOR TO HYDROSEED THOSE AREAS WHERE GRASS WAS COMPROMISED. THE MAXIMUM EXTENT THAT COULD BE HYDROSEEDED IS SHOWN ABOVE WITH HATCHING (0.6 ACRES).

STAGING & PLANTING
SCALE: 1" = 50'-0"

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KALAMA FALLS HATCHERY

MODROW TRAP MITIGATION, LOWER KALAMA

STAGING AND PLANTING SCHEDULE

PROJECT NO. CZ:H28:12-2

SHEET 4 OF 4